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Rajesh Pankaj

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EXAMINER

MOORE, IAN N

ART UNIT

PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/781,012	<b>Applicant(s)</b> PANKAJ ET AL.	
	<b>Examiner</b> Ian N Moore	<b>Art Unit</b> 2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/30/01, 7/17/03</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method and apparatus for transmitting message with reduced transmit power in a CDMA wireless communication system.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 17, 18, 29 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "messages **more likely** to be transmitted" in **claim 17** line 4 is a relative term which renders the claim indefinite. The term "**more likely**" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. In particular, it is unclear whether the messages are transmitted or not.

Claims **18, 29 and 30** are also rejected for the same reason as stated above.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 31, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh (U.S. 6,718,180) in view of Kanterakis (U.S. 2002/0136272A1).

**Regarding claims 1, 31, 35,36 and 37, Lundh'180 discloses an access terminal (see FIG. 2, MS 115) in a wireless CDMA communication system (see FIG. 2, CDMA wireless communication section 100, see col. 5, lines 45-60), comprising:**

**a receiver (see FIG. 2, a receiver of MS 115) for receiving a signal from an access network or transmitting source (see FIG. 2, base stations, BS, 110) and determining at least one characteristic (see FIG. 4, step 410, power reception; see col. 7, lines 20-26) of a forward link channel through which the signal is received (see FIG. 4, step 410, 415; MS receives transmission signals from BS via forward link channel and analyzes the power reception levels; see col. 7, lines 15-25);**

**a data processor (see FIG. 2, a processor of MS 115) configured to form a control message (see FIG. 4, step 420; power command) indicative of a state of the forward link channel (see col. 7, lines 24-26; 50-67; note that a power control command is send by the MS, based on received power analysis's of the forward link channel from the BS. The**

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power command consists TPC bit, Transmit Power Control, which instructs BS to increase or reduce the transmit power of the BS) and

a transmitter unit (see FIG. 2, a transmitter of MS 115) configured to transmit the control message based at least in part on the control message (see FIG. 4, step 420 and 425; see col. 7, line 15-35; MS sends the power control command to BS based on the analyzed power reception levels).

Lundh'180 does not explicitly disclose transmitting control message at a particular transmit power.

However, the above-mentioned claimed limitations are taught by Kanterakis'272. In particular, Kanterakis'272 teaches a receiver (see FIG. 4, RF 411, de-modulator 412), a processor unit (see FIG. 4, processor 416-418) and transmitter unit (see FIG. 4, RF 430, de-modulator 429) of access terminal (see FIG. 4, Mobile station); transmit the control message at a particular transmit power (see FIG. 6, first RS power control signal, with first power level P0 is sent to the base station; see page 1, paragraph 7-9) determined based at least in part on the control message (see page 3, paragraph 45-47; note that a power level P0 is determined based on the step/order of the RS power control signal message, i.e., the power increase to second P1 and third power level P2 for second and third RS power control signal messages; see page 4, paragraph 58).

In view of this, having the system of Lundh'180 and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Lundh'180, for the purpose of providing mechanism of transmitting access control message at particular transmit power of P0 based

upon the step/order access control message, as taught by Kanterakis'272, since Kanterakis'272 states the advantages/benefits at page 1, paragraph 3-7, see page 3-4 , paragraph 49-51 that it would provide a high data throughput and low delay and efficient power control.. The motivation being that by transmitting the power command message at a particular power level base upon the step/order of the control message, it will increase the base station capability to successfully receive the power command message transmitted by the mobile station.

**Regarding claim 2**, Lundh'180 discloses a particular codeword selected (see FIG. 5, TPC with power up or down with a dB message is specified) from among a plurality of possible codewords (see col. 7, lines 50 to col. 8, lines 21; note that a specific TPC with power increase or decrease message is specified from various power adjustment TPCs such at increase/decrease by 0.25,0.5,1,2,4 dB, etc.)

4. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh'180 and Kanterakis'272 as applied to claim 1 above, and further in view of Halford (U.S. 6,614,836).

**Regarding claim 3**, the combined system of Lundh'180 and Kanterakis'272 discloses the power level of the selected codeword is determined as described above in claim 1 and 2. Lundh'180 further discloses the power level is determined based on the distance (see FIG. 3C, MS 355, attenuation L1, L2 and BSs 345 and 350; note that power level of MS is related and determined according to attenuation of the signal. The distance between the MS and BSs

cause the attenuation. The longer the distance, the more signal attenuate. Thus, it is clear that power level is determined based on the distance, which causes the attention.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses determining based upon a minimum distance.

However, the above-mentioned claimed limitations are taught by Halford'836. In particular, Halford'836 teaches determining signal power based upon minimum distance (see **FIG. 5, the receiver r determines and selected the signal (i.e. S1) based upon minimum distance (i.e. d1); see col. 5, lines 40-65**).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Halford'836, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of providing the signal power based upon the minimum distance, as taught by Halford'836, since Halford'836 states the advantages/benefits at see col. 3, lines 30-67 and see col. 5, lines 35-40 that it would provide optimal minimum distance receiver with improved performance by incorporating energy into receiver decision. The motivation being that by examining the distortion effects of multi-path channel by utilizing the distances on the signal received, it will improve the bias-corrected receiver.

**Regarding claim 9**, the combined system of Lundh'180 and Kanterakis'272 discloses the selected codeword as described above in claim 1 and 2. Lundh'180 further discloses determining the quality of the channel (see FIG. 4, step 415, a reception power quality of

downlink channel) based on the distance (see FIG. 3C, MS 355, attenuation L1, L2 and BSs 345 and 350; note that reception power quality of MS is related and determined according to attenuation of the signal. The distance between the MS and BSs cause the attenuation. The longer the distance, the more signal attenuate. Thus, it is clear that reception power quality is determined based on the distance, which causes the attention.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses a minimum distance.

However, the above-mentioned claimed limitations are taught by Halford'836. In particular, Halford'836 teaches the selected the codeword has a minimum distance (see FIG. 5, the receiver r determines and selected the codeword signal (i.e. S1) has a minimum distance (i.e. d1); see col. 5, lines 40-65).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Halford'836, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of providing the selected codeword signal has the minimum distance, as taught by Halford'836, since Halford'836 states the advantages/benefits at see col. 3, lines 30-67 and see col. 5, lines 35-40 that it would provide optimal minimum distance receiver with improved performance by incorporating energy into receiver decision. The motivation being that by examining the distortion effects of multi-path channel by utilizing the distances on the signal received, it will improve the bias-corrected receiver.

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5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh'180 and Kanterakis'272 as applied to claim 1 above, and further in view of well established teaching in art.

**Regarding claim 4**, the combined system of Lundh'180 and Kanterakis'272 discloses the power level of the selected codeword being transmitted is determined as described above in claim 1 and 2.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses determining based on an expected frequency.

However, the above-mentioned claimed limitations are taught by well established teaching in art. In particular, well-established teaching in art teaches determining signal power based on an expected frequency. Lundh'180 teaches the CDMA system where the MS communicates with two base stations. It is well known in the art of wireless communication that, the frequency is reused by way of cells or sectors in order to utilized the allowable bandwidth provisioned by FCC, and MS operates within the expected and allowable frequency range, 850 MHZ for cellular and 1900 MHZ for PCS. Thus, it is clear that determination of signal power is based upon expected frequency.

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of utilizing an expected and allowable frequency in wireless network, as taught by well established teaching in art. The motivation being that by determining the power according to expected

and allowable frequency, it will enable the conformance of FCC regulation and increase the efficient bandwidth utilization of reusing expected allowable frequency.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh'180 and Kanterakis'272, as applied to claim 1 and 2 above, and further in view of Komaili'446 and well established teaching in art.

**Regarding claim 10**, the combined system of Lundh'180 and Kanterakis'272 discloses the selected codeword as described above in claim 1 and 2.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses a minimum distance.

However, the above-mentioned claimed limitations are taught by Halford'836. In particular, Halford'836 teaches the selected the codeword has a minimum distance (**see FIG. 5, the receiver r determines and selected the codeword signal (i.e. S1) has a minimum distance (i.e. d1); see col. 5, lines 40-65**).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Halford'836, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of providing the selected codeword signal has the minimum distance, as taught by Halford'836, since Halford'836 states the advantages/benefits at see col. 3, lines 30-67 and see col. 5, lines 35-40 that it would provide optimal minimum distance receiver with improved performance by incorporating energy into receiver decision. The motivation being that by examining the distortion effects of multi-path

channel by utilizing the distances on the signal received, it will improve the bias-corrected receiver.

Neither Lundh'180, Kanterakis'272 nor Komaili'446 explicitly discloses determining based on frequency.

However, the above-mentioned claimed limitations are taught by well established teaching in art. In particular, well-established teaching in art teaches determining based on an expected frequency. Lundh'180 teaches the CDMA system where the MS communicates with two base stations. It is well known in the art of wireless communication that, the frequency is reused by way of cells or sectors in order to utilized the allowable bandwidth provisioned by FCC, and MS operates within the expected and allowable frequency range, 850 MHZ for cellular and 1900 MHz for PCS. Thus, it is clear that determination of a codeword for a signal is based upon expected frequency.

In view of this, having the combined system of system of Lundh'180, Kanterakis'272 and Komaili'446, then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180, Kanterakis'272 and Komaili'446, for the purpose of utilizing an expected and allowable frequency in wireless network, as taught by well established teaching in art. The motivation being that by determining the power according to expected and allowable frequency, it will enable the conformance of FCC regulation and increase the efficient bandwidth utilization of reusing expected allowable frequency.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh'180 and Kanterakis'272 as applied to claim 1 above, and further in view of Cho (U.S. 6,049,633).

**Regarding claim 5**, the combined system of Lundh'180 and Kanterakis'272 discloses the power level of the selected codeword being transmitted is determined as described above in claim 1 and 2.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses determined based on a particular number of times the codeword is repeated.

However, the above-mentioned claimed limitations are taught by Cho'633. In particular, Cho'633 teaches determining based on a particular number of times the selected codeword is repeated (see FIG. 4D, code words 0,1,01 and 10; see col. 8, lines 16-57; note that as shown in table 130, the determining and processing a plurality of symbols codes at a time based upon the count of codeword is determined based upon number of time a selected code word (i.e. 0, 1, 01, 10 or 11) is counted and repeated; see col. 1, lines 41 to col. 2, lines 25).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Cho'633, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of determining and processing a plurality of symbol codewords based upon count of the codewords, as taught by Cho'633 as stated in col. 1, lines 35-40 and col. 2, lines 15-25, that it will provide an adaptive arithmetic coding scheme capable of processing a group of symbols at a time. The motivation being that

by utilizing a codeword table and corresponding count values to encode/decode data in a group of codes at a time, it will increase the speed of real-time data processing.

8. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh'180 and Kanterakis'272 as applied to claim 1 above, and further in view of Komaili (U.S. 2003/0003446A1).

**Regarding claim 6**, the combined system of Lundh'180 and Kanterakis'272 discloses the first entity transmitting the control message to second entity as described above in claim 1.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses a message indicative of a rate for a data transmission requested.

However, the above-mentioned claimed limitations are taught by Komaili'446. In particular, Komaili'446 teaches the message is a data rate control message indicative of a rate for a data transmission requested from the second entity (see FIG. 7, steps 702-724; note that in step 702, MS receipt a frame/message with soft-coded rate bits from the BS. The MS sets the vocoder rate according to the requested rate from BS (step 706) and transmits the frame back to BS (step 712); see page 9, paragraph 99-103).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Komaili'446, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of MS sending a message frame of a data rate for a data transmission requested from BS, as taught by Komaili'446 as stated in

page 1, paragraph 10-13, that it will provide a reliable communication between the MS and BS. The motivation being that by adjusting the rate between MS and BS in response to level of interference, it will increase the reliability of the network by providing best possible speech quality.

**Regarding claim 7**, the combined system of Lundh'180 and Kanterakis'272 discloses the at least one characteristic as described above in claim 1.

Neither Lundh'180 nor Kanterakis'272 explicitly discloses a carrier-to-noise-plus interference ratio (C/I).

However, the above-mentioned claimed limitations are taught by Komaili'446. In particular, Komaili'446 teaches a carrier-to-noise-plus interference ratio (C/I) (see FIG. 3, Carrier-to-noise ratio which include C/N portion; see page 4, paragraph 47 and page 7, paragraph 80-83).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Komaili'446, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of measuring/determining C/I, as taught by Komaili'446 as stated in page 1, paragraph 10-13, that it will provide a reliable communication between the MS and BS. The motivation being that by measuring/determining the C/I in order to adjust the rate between MS and BS, it will increase the reliability of the network by providing best possible speech quality.

**Regarding claim 8**, Lundh'180 discloses the control message (see FIG. 5, a power up or down control message) is selected from among control messages (see col. 7, lines 50 to col. 8, lines 21; note that a specific/particular control message with power increase or decrease message is specified/selected from various power adjustment message such at increase/decrease by 0.25,0.5,1,2,4 dB, etc.)

Neither Lundh'180 nor Kanterakis'272 explicitly discloses a data rate control message.

However, the above-mentioned claimed limitations are taught by Komaili'446. In particular, Komaili'446 teaches the message is a data rate control message (see FIG. 7, steps 702-724; note that in step 702, MS receipt a frame/message with soft-coded rate bits from the BS. The MS sets the vocoder rate according to the rate from BS (step 706) and transmits the frame back to BS (step 712); see page 9, paragraph 99-103).

In view of this, having the combined system of system of Lundh'180 and Kanterakis'272, then given the teaching of Komaili'446, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of MS sending a message frame of a data rate for a data transmission, as taught by Komaili'446 as stated in page 1, paragraph 10-13, that it will provide a reliable communication between the MS and BS. The motivation being that by sending and adjusting the data rate between MS and BS in response to level of interference, it will increase the reliability of the network by providing best possible speech quality.

9. Claims 11, 16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela (U.S. 6,452,914) in view of Seshadri (U.S. 5,289,501).

**Regarding claims 11 and 21**, Niemela'914 discloses a wireless communication system (see **FIG. 2, digital radio system**), a method for transmitting a message (see FIG. 1, normal burst) from a first entity, and access terminal, (see **FIG. 2, MS**) to a second entity (see FIG. 2, BTS),

Identifying a codeword associated with a message (see **FIG. 3a-b and FIG. 4, a codeword and message**; note that MS receives and process the codeword associated with the quality of link (Qul or Qdl or PC) for a message; see col. 4, lines 12 to col. 5, lines 5), wherein the codeword is one of a plurality of codewords (see **FIG. 3 and 4, codewords 1-7 or 1-8**) defined for an alphabet (see **FIG. 3 and 4, a group of 7 codewords or a group of 8 codewords; note that a group of codeword is determined according to the power control process, steps and C/I ratio; see col. 4, lines 54 to col. 5, lines 5**), and wherein codewords in the alphabet have unequal distances to their nearest codewords (see **col. 5, lines 5-15**; note that codewords in the group of codeword have various Hamming distances, and the minimum distance between the codewords are searched. Codeword 1 has the different distance from its nearest codeword 2); and

transmitting the identified codeword from the first entity to second entity (see **col. 5, lines 5-39**; note that MS transmits the codeword identified by the FIG. 3 and FIG. 4 to BTS).

Niemela'914 does not explicitly discloses wherein at least two codewords.

However, the above-mentioned claimed limitations are taught by Seshadri'501. In particular, Seshadri'501 teaches wherein at least two codewords (see **col. 15, lines 55, lines**

**55-64; first code and second code) have unequal distances to their nearest codewords (see col. 9, lines 9, lines 1 to col. 10, lines 49; note that first code's Humming code is greater than the second code's Humming distance, thus, they are unequal, and their distance is unequal from their nearest neighbor's code).**

In view of this, having the system of Niemela'914 and then given the teaching of Seshadri'501, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914, for the purpose of providing at least codes have unequal distances to their nearest codes, as taught by Seshadri'501, since Seshadri'501 states the advantages/benefits at see col. 2, lines 20-50 that it would effective, bandwidth and power-efficient transmission scheme which can provide unequal error protection in fading channel environment. The motivation being that by providing the at least two codes which has different distance from its neighbors, it can increase the redundancy in the fading channel network environment.

**Regarding claims 16**, Niemela'914 discloses the message to be transmitted is one of a plurality of possible messages (see FIG. 1, a normal burst, note that shown normal burst is one the plurality of possible normal burst that is transmitted between MS and BTS), and wherein the plurality of codewords in the alphabet (see FIG. 3 and 4, codewords in a group shown in FIG. 3a, 3b and 4) are assigned to the plurality of possible messages in accordance with a particular assignment scheme (see FIG. 1, DS; see FIG. 3 and 4; note that codewords in that each group of codeword is assigned to each burst message according to the particular

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power control scheme, such as increase or decrease or normal; see col. 3, lines 20-40 and col. 4, lines 46 to col. 5, lines 26).

10. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela'914 and Seshadri'501 as applied to claim 11 above, and further in view of Kanterakis'272.

**Regarding claim 12**, the combined system of Niemela'914 and Seshadri'501 discloses transmitting identified codeword as described above in claim 11.

Neither Niemela'914 nor Seshadri'501 explicitly discloses determining a transmit power level, and transmitted at the determined transmit power level.

However, the above-mentioned claimed limitations are taught by Kanterakis'272. In particular, Kanterakis'272 teaches determining the message a transmit power level and transmitting at the transmit power (**see FIG. 6, first RS power control signal message, with first power level P0 is sent to the base station; see page 1, paragraph 7-9; see page 3, paragraph 45-47; note that a power level P0 is determined based on the step/order of transmitted RS power control signal message; see page 4, paragraph 58**).

In view of this, having the combined system of Niemela'914 and Seshadri'501, and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Seshadri'501, for the purpose of providing mechanism of determining and transmitting a message at transmit power of P0 based upon the step/order access control message, as taught by Kanterakis'272, since Kanterakis'272 states the advantages/benefits at page 1, paragraph 3-7, see page 3-4, paragraph 49-51 that it would provide a high data

throughput and low delay and efficient power control.. The motivation being that by transmitting the power command message at a particular power level base upon the step/order of the control message, it will increase the base station capability to successfully receive the power command message transmitted by the mobile station.

**Regarding claim 13**, the combined system of Niemela'914 and Seshadri'501 discloses the identified codeword and the codeword has unequal distance to its nearest codewords as described above in claim 11. Kanterakis'272 discloses transmit power level is based at least in part on the message (see page 3, paragraph 45-47; note that a power level **P0 is determined based on the step/order of the RS power control signal message, i.e., the power increase to second P1 and third power level P2 for second and third RS power control signal messages; see page 4, paragraph 58).**

In view of this, having the combined system of Niemela'914 and Seshadri'501 and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914 and Seshadri'501, for the same purpose and motivation as stated above in claim 12.

**Regarding claim 14**, Kanterakis'272 discloses transmit power level is determined to achieve a particular level of performance (see page 3-4, paragraph 47-51; note that a power level **P is determined on the step/order of the RS power control signal message in order to reach the power level acceptable by both BS and MS).**

In view of this, having the combined system of Niemela'914 and Seshadri'501 and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914 and Seshadri'501, for the same purpose and motivation as stated above in claim 12.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela'914, Seshadri'501, and Kanterakis'272, as applied to claim 12 above, and further in view of Salvarani (U.S. 6,760,597).

**Regarding claim 15**, the combined system of Niemela'914, Seshadri'501 and Kanterakis'272 discloses a particular level of performance.

Neither Niemela'914, Seshadri'501 nor Kanterakis'272 explicitly discloses one percentage frame error rate (see Salvarani'597 col. 3, lines 30-35; target 1% FER).

In view of this, having the combined system of Niemela'914, Seshadri'501 and Kanterakis'272, and then given the teaching of Salvarani'597, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Seshadri'501, for the purpose of providing 1% FER, as taught by Salvarani'597, since Salvarani'597 states the advantages/benefits at see col. 3, lines 25 to col. 4, lines 35 that it would provide a reliable method which comply with target FER without affecting power control information being conveyed over the at least one reliable link. The motivation being that by setting target FER to 1%, it will increase reliability of network while maintaining the quality imposed by the network.

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12. Claim 17, 18, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela'914, Seshadri'501, and Kanterakis'272, as applied to claim 16 above, and further in view of well established teaching in art.

**Regarding claim 17 and 18**, the combined system of Niemela'914 and Seshadri'501 discloses the plurality of possible message such that messages more likely to transmitted are assigned with codewords having distances to their nearest codewords as described above in claim 11 and 16.

Neither Niemela'914 nor Seshadri'501 explicitly discloses higher transmit power levels are assigned to larger distances or assigning to larger distance.

However, the above-mentioned claimed limitations are taught by well established teaching in art. In particular, well established teaching in art teaches the plurality of possible messages more likely to be transmitted, or transmitted at higher transmit power levels, are assigned with codewords having larger distances or assigning to larger distance. Note that the combined system of Niemela'914 and Kanterakis'272 teaches assigning codeword in accordance with distance to their nearest codewords. Niemela'914 teaches the MS and BTS station. Thus, depending on the location of the MS, MS transmits high or low transmit power in order to communicate with BTS. Thus, when MS is longer distance from the BTS, it transmits at high transmit power level with the associated longer distance codeword, whereas, MS is shorter distance from BTS, it transmits at lower transmit power level with the associated short distance codeword. Thus, it is clear that the message that are required to transmit with higher power levels must be assigned to longer distance codewords.

In view of this, having the combined system of Niemela'914 and Seshadri'501, and then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Seshadri'501, for the purpose of providing mechanism transmitting at higher power level for longer distance codeword, as taught by well established teaching in art. The motivation being that by transmitting a high transmit power for a longer distance codeword, it will increase the capability of ensuring to reach a longer distance BTS.

**Regarding claim 29 and 30**, the combined system of Niemela'914 and Seshadri'501 discloses the plurality of possible message such that messages more likely to transmitted are assigned with codewords to achieve the particular level of performance (see col. 4, lines 15-67; **performing power adjustment for the message that are transmitted in order to maintain the acceptable quality performance**) as described above in claim 23.

Neither Niemela'914 nor Seshadri'501 explicitly discloses higher transmit power levels are assigned to message requiring lower or less power.

However, the above-mentioned claimed limitations are taught by well-established teaching in art. In particular, well established teaching in art teaches the plurality of possible messages more likely to be transmitted, or transmitted at higher transmit power levels, are assigned with codewords requiring lower or less power to achieve the particular level. Note that the combined system of Niemela'914 and Kanterakis'272 teaches assigning codeword in accordance with distance to their nearest codewords. Niemela'914 teaches the MS and BTS station. Thus, depending on the location of the MS, MS transmits high or low transmit power

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in order to communicate with BTS. The longer the distance, the more power it is required, however, the high transmit power causes interference to neighbors. Thus, it is clear that the message from the MS that normally transmits with high transmit power is assigned to the codeword which only required lesser or less transmit power (i.e. the nominal or minimum acceptable power) just enough to maintain the acceptable quality.

In view of this, having the combined system of Niemela'914 and Seshadri'501, and then given the teaching of well established teaching in art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Seshadri'501, for the purpose of providing mechanism of MS transmitting with less transmit power level for the message that is normally send with high power, as taught by well established teaching in art. The motivation being that by transmitting at a lower or less transmit power for a message that normally send with a high power, it will reduce the interference to other MS due to high transmit power.

13. Claims 19, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela'914, Seshadri'501, as applied to claim 11 above, and further in view of Halford'836.

**Regarding claim 19**, Niemela'914 wherein the alphabet includes N codewords (see FIG. 3 and 4, codewords 1-8 or 1-7) having minimum distances (see col. 5, lines 5-20).

Neither Niemela'914 nor Seshadri'501 explicitly discloses minimum distance of  $d_{\text{sub.1}}$  through  $d_{\text{sub.N}}$ , and wherein the minimum distances conform to the  $d_1 \geq d_2 \geq \dots \geq d_{N-1} \geq d_N$  and  $d_1 > d_N$  (Halford'836, FIG. 5, where distance  $d_1$ ,  $d_2$ ,  $d_3$  and  $d_4$  and

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the minimum distance  $d_4 > d_1$ , where S1-S4 are **the codeword signal (i.e. S1) has a minimum distance (i.e.  $d_1$ )**; see col. 5, lines 40-65).

In view of this, having the combined system of system of Niemela'914 and Seshadri'501, then given the teaching of Halford'836, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Seshadri'501, for the purpose of providing the selected codeword signal has the minimum distance, as taught by Halford'836, since Halford'836 states the advantages/benefits at see col. 3, lines 30-67 and see col. 5, lines 35-40 that it would provide optimal minimum distance receiver with improved performance by incorporating energy into receiver decision. The motivation being that by examining the distortion effects of multi-path channel by utilizing the distances on the signal received, it will improve the bias-corrected receiver.

**Regarding claim 25 and 26**, the combined system of Niemela'914 and Seshadri'501 discloses the plurality of codewords in the alphabet are associate in a signal constellation (see FIG. 3 and 4, a group of message, with related/associated to a group of codeword) and wherein at least two points in the signal constellation have unequal distances to their nearest codewords as described in claim 23.

Neither Niemela'914 nor Seshadri'501 explicitly discloses plurality of codewords are associate with a plurality of points in a signal constellation selected from points in signal cons (see Halford'836, FIG. 5, S1-S4 are **the codeword signal (i.e. S1) and their associate points in QPSK constellation**; see col. 5, lines 40-65).

In view of this, having the combined system of system of Niemela'914 and Seshadri'501, then given the teaching of Halford'836, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Seshadri'501, for the purpose of associating relating signal codewords with points in QPSK constellation, as taught by Halford'836, since Halford'836 states the advantages/benefits at see col. 3, lines 30-67 and see col. 5, lines 35-40 that it would provide optimal minimum distance receiver with improved performance by incorporating energy into receiver decision. The motivation being that by examining the distortion effects of multi-path channel by utilizing the distances on the signal received, it will improve the bias-corrected receiver.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela'914 and Seshadri'501, as applied to claim 11 above, and further in view of Lundh'180.

**Regarding claim 22**, the combined system of Niemela'914 and Seshadri'501 discloses the wireless communication system as described above in claim 11.

Neither Niemela'914 nor Seshadri'501 explicitly discloses CDMA system.

However, the above-mentioned claimed limitations are taught by Lundh'180. In particular, Lundh'180 teaches a CDMA system (see FIG. 1-10, a CDMA system; see col. 4, lines 40-53; see col. 1, lines 20-50).

In view of this, having the combined system of system of Niemela'914 and Seshadri'501, then given the teaching of Lundh'180, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined

system of Niemela'914 and Seshadri'501, for the purpose providing power control in CDMA system, as taught by Lundh'180 as stated in see col. 1, lines 30-40, col. 2, lines 1-30, that it will balance the transmit power between MS and BS which is important to CDMA system. The motivation being that by utilizing balance power control mechanism in the CDMA system, it will increase the reliability of the network while reducing the interference between MS, other MS and BS.

15. Claims 23, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela (U.S. 6,452,914) in view of Kanterakis'272.

**Regarding claims 23 and 32**, Niemela'914 discloses an access terminal (see **FIG. 2, MS**) in a wireless communication system (see **FIG. 2, digital radio system**), comprising:

a data processor configured to receive and process (see **FIG. 5, a combined system of Coding means 101, Interleaved means S 102, processing means P 103, and conversion means A/D 104 of within MS; note that the same processing is performed in FIG. 6 for receiver**) a codeword for a message (see **FIG. 3a-b and FIG. 4, a codeword and message; note that MS receives and process the codeword associated with the quality of link (Qul or Qdl or PC) for a message; see col. 4, lines 12 to col. 5, lines 5**), wherein the codeword is one of a plurality of codewords (see **FIG. 3 and 4, codewords 1-7 or 1-8**) defined for an alphabet (see **FIG. 3 and 4, a group of 7 codewords or a group of 8 codewords; note that a group of codeword is determined according to the power control process, steps and C/I ratio; see col. 4, lines 54 to col. 5, lines 5**), and wherein at least two codewords in the alphabet (see **FIG. 3b, codeword 1 and 2 of the group codeword**) may be

transmitted for a particular level of performance under similar link condition (see col. 4, lines 34 to col. 5, lines 5; Q<sub>ul</sub> or Q<sub>dl</sub>, note that the codewords (i.e. see FIG. 3b, 1 and 2) are transmitted for channel quality Q<sub>ul</sub> or Q<sub>dl</sub> under the related radio link during eight steps power control messages between BS and MS); and

transmitter unit (see **FIG. 5, RF 105 and antenna 106 within MS**) operatively coupled to the data processor and configured to transmit the processed codeword (see col. 5, lines 5-39; note that RF 105 is coupled to a combined processing system and transmit the codeword identified by the FIG. 3 and FIG. 4).

Niemela'914 does not explicitly disclose transmitting the codewords with different amounts of energy; and determining a transmit power level for the identified codeword.

However, the above-mentioned claimed limitations are taught by Kanterakis'272. In particular, Kanterakis'272 teaches at least two codewords (see **FIG. 6, first RS power control signal message and second RS power control signal message; see page 1, paragraph 7-9**) may be transmitted with different amounts of energy for a particular level of performance under similar link condition (see **FIG. 6, the first RS power control signal message with first power level P<sub>0</sub> and the second RS power control signal message with second power level P<sub>1</sub>; see page 3, paragraph 45-47; see page 4, paragraph 58; page 6, paragraph 77-78; note that first and second power control message are sent P<sub>0</sub> and P<sub>1</sub> with a quality performance of reaching to a BS in similar link between MS and BSC**) and

determining a transmit power level for the identified codeword (see page 3, paragraph 45-47; note that a power level P0 is determined for the first RS power control signal message, with the minimum power; see page 4, paragraph 58).

In view of this, having the system of Niemela'914 and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914, for the purpose of providing mechanism of transmitting the first and second RS power control signal messages with different power energy and identifying the transmit power for the first message, as taught by Kanterakis'272, since Kanterakis'272 states the advantages/benefits at page 1, paragraph 3-7, see page 3-4 , paragraph 49-51 that it would provide a high data throughput and low delay and efficient power control.. The motivation being that by transmitting the power command message at a particular power level base upon the step/order of the control message, it will increase the base station capability to successfully receive the power command message transmitted by the mobile station.

**Regarding claim 33**, the combined system of Niemela'914, Kanterakis'272 and Seshadri'501 discloses the data processor and processing codeword as described above in claim 31. Kanterakis'272 further discloses a controller (see FIG. 4, Controller 410) operatively coupled to the data processor (see FIG. 4, Processor 416-418) and configured to provide a signal indicative of transmit power level to be used (see **FIG. 4, a signal of TPC and PILOT to packet formatter, a signal to DAC, and/or a signal sequence generator**

**427; controller sends a signal regarding the transmit power to be used; see page 2, paragraph 36-49).**

In view of this, having the system of Niemela'914 and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914 as taught by Kanterakis'272, for the same purpose and motivation as described above in claim 32.

**Regarding claim 34**, Niemela'914 discloses a signal quality measurement unit configured to receive samples for a received signal (see FIG. 6, processor 203 of receiver 203 which has a capability of estimation received signal quality Qdl; also see FIG. 2, block 1, col. 2, lines 20-25; note that MS's processor 203 receives digitized samples from A/D 202) and to determine a received signal quality of signals transmitted from one or more transmitting sources (the processor estimates the received signal quality from BTS), and wherein the processed codeword (see FIG. 3 and 4, codewords and see FIG. 5, processing means 103 and conversion means 104) is transmitted based in part on the received signal quality of a transmitting source (see FIG. 2, MS sends the power control command to BTS based on the estimation of received power quality levels; see col. 4, lines 12-34 and see col. 5, lines 39-64). Kanterakis'272 also discloses wherein the processed codeword (see FIG. 6, the first RS power control signal message) is transmitted at a power level (see FIG. 6, first power level P0) based in part on the received signal quality of a transmitting source to which the processed codeword is transmitted (see page 3, paragraph 45-47; note that a power level P0 is determined based on the step/order of the RS power

**control signal message, i.e., the power increase to second P1 and third power level P2 for second and third RS power control signal messages; see page 4, paragraph 58).**

In view of this, having the system of Niemela'914 and then given the teaching of Kanterakis'272, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914 as taught by Kanterakis'272, for the same purpose and motivation as described above in claim 32.

16. Claims 24, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemela'914 and Kanterakis'272 as applied to claim 23 above, and further in view of Seshadri'501.

**Regarding claim 24**, the combined system of Niemela'914 and Seshadri'501 discloses wherein codewords in the alphabet have unequal distances to their nearest codewords (see **col. 5, lines 5-15**; note that codewords in the group of codeword have various Hamming distances, and the minimum distance between the codewords are searched. Codeword 1 has the different distance from its nearest codeword 2).

Neither Niemela'914 nor Kanterakis'272 explicitly discloses wherein at least two codewords.

However, the above-mentioned claimed limitations are taught by Seshadri'501. In particular, Seshadri'501 teaches wherein at least two codewords (see **col. 15, lines 55, lines 55-64; first code and second code**) have unequal distances to their nearest codewords (see **col. 9, lines 9, lines 1 to col. 10, lines 49; note that first code's Humming code is greater**

**than the second code's Humming distance, thus, they are unequal, and their distance is unequal from their nearest neighbor's code).**

In view of this, having the combine system of Niemela'914 and Kanterakis'272, and then given the teaching of Seshadri'501, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Niemela'914 and Kanterakis'272, for the purpose of providing at least codes have unequal distances to their nearest codes, as taught by Seshadri'501, since Seshadri'501 states the advantages/benefits at see col. 2, lines 20-50 that it would effective, bandwidth and power-efficient transmission scheme which can provide unequal error protection in fading channel environment. The motivation being that by providing the at least two codes which has different distance from its neighbors, it can increase the redundancy in the fading channel network environment.

In view of this, having the system of Niemela'914 and then given the teaching of Seshadri'501, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Niemela'914 as taught by Seshadri'501, for the same purpose of motivation as stated above in claim 23.

**Regarding claim 27**, Niemela'914 discloses wherein at least two codewords in the alphabet have unequal lengths (see FIG. 3b and 4, a codeword 1 (in binary 0001) and a codeword 8 (in binary 1000), thus codeword 1 and codeword 8 have different length).

**Regarding claim 28**, Niemela'914 discloses encoding the identified codeword in accordance with a particular coding scheme (see FIG. 5, coder 101, see col. 5, lines 25-36; note that a coding means encodes the codeword symbols according to the coding scheme; see col. 8, lines 26-30; 8-PSK-modulation scheme is utilized to encode the codeword symbols).

17. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lundh'180, Kanterakis'272, as applied to claim 37 above, and further in view of Niemela'914.

**Regarding claim 38**, Kanterakis'272 discloses at least two codewords (see FIG. 6, **first RS power control signal message and second RS power control signal message**) may be transmitted with different amounts of power for a particular level of performance under similar link condition (see FIG. 6, **the first RS power control signal message with first power level P0, and the second RS power control signal message with second power level P1**; see page 3, paragraph 45-47; see page 4, paragraph 58; page 6, paragraph 77-78; note that **first and second RS power control signal message are sent P0 and P1 with a quality performance of reaching to a BS in similar link between MS and BSC**).

Nether Lundh'180 nor Kanterakis'272 explicitly discloses a codeword selected from among plurality of codewords (see Niemela'914 FIG. 3a-b and FIG. 4, **a codeword and message, codewords 1-7 or 1-8**; see col. 4, lines 12 to col. 5, lines 5) defined for an alphabet (see Niemela'914 FIG. 3 and 4, **a group of 7 codewords or a group of 8 codewords**; note that **a group of codeword is determined according to the power control process, steps and C/I ratio**; see col. 4, lines 54 to col. 5, lines 5), and wherein at least two codewords in

the alphabet (see **FIG. 3b, codeword 1 and 2 of the group codeword**) may be transmitted for a particular level of performance under similar link condition (see col. 4, lines 34 to col. 5, lines 5; Qul or Qdl, note that the codewords (i.e. see FIG. 3b, 1 and 2) are transmitted for channel quality Qul or Qdl under the related radio link during eight steps power control messages between BS and MS).


However, the above-mentioned claimed limitations are taught by Niemela'914. In view of this, having the combine system of Lundh'180 and Kanterakis'272, and then given the teaching of Niemela'914, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Lundh'180 and Kanterakis'272, for the purpose of providing plurality of codeword defined for a group of codeword, as taught by Niemela'914, since Niemela'914 states the advantages/benefits at see col. 1, lines 55 to col. 2, lines 63 that it would create faster the signaling rate. The motivation being that by utilizing the plurality of codewords in a group of codeword for a power control steps, it can create faster the signaling rate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 703-605-1531. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on 703-308-7828. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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